

SOUTHERN RHODESIA.

Report
on
The Public Health
For the Year 1931.

Presented to the Legislative Assembly,
1932.

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CONTENTS.

PAGE

INTRODUCTORY	1
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CHAPTER I.—THE PUBLIC HEALTH OF SOUTHERN RHODESIA: VITAL STATISTICS.

(1) Population	1
(2) Births	1
(3) Deaths	2
(4) Infant Mortality	3
(5) Maternal Mortality	4

CHAPTER II.—INFECTIOUS AND COMMUNICABLE DISEASES.

(1) Notification	6
(2) Malaria	7
(3) Leprosy	8
(4) Helminthic Disease	9
(5) Small-pox	11
(6) Tuberculosis	11
(7) Venereal Disease	12
(8) Pneumonia and Bronchitis	12
(9) Typhoid Fever	12
(10) Cerebro-spinal Meningitis	12
(11) Whooping Cough, Measles, Scarlet Fever, Chicken-pox and German Measles	12
(12) Influenza	13
(13) Yaws	13
(14) Pseudo-typhus Fever	13
(15) Human Trypanosomiasis	13
(16) Diphtheria	13
(17) Plague, Rabies, Typhus Fever	13
(18) Undulant Fever	13

CHAPTER III.—GENERAL.


(1) Spread of Disease by Aircraft	13
(2) Town Planning	14
(3) School Medical Service	15
(4) The Health of the Native	17
(5) Native Labour on Mines and Works	18
(6) Laboratories	19

CHAPTER IV.—HOSPITALS	19
------------------------------	----

CHAPTER V.—ADMINISTRATIVE.

(1) Staff	22
(2) Revenue and Expenditure	22
(3) Southern Rhodesia Nursing Service	22
(4) Health of the B.S.A. Police	23
(5) Legislation	23
(6) Medical Council	23
(7) Habit-forming Drugs	23

Statistical Tables	25
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Report on the Public Health for the Year 1931.

Introductory.—The year 1931 was remarkable from the point of view of the public health of the European population of Southern Rhodesia. In spite of the mortality from malaria, which, for reasons stated further on in this report, was greater than last year, the general death rate—8.3 per 1,000 persons—is the lowest on record in this country, and is a very low death rate. The infant mortality rate—44.8 per 1,000 births—is the lowest on record in Southern Rhodesia, while the birth rate—23.6 per 1,000 persons—though it does not constitute a record, is satisfactorily high. On the other hand, the maternal mortality rate—5.1 per 1,000 births—remains high.

The incidence of infectious disease was low, and only 43 cases of small-pox were recorded, as against 697 in the previous year.

For reasons of economy, certain urgently required extensions of the medical service outlined in my last report have been unavoidably delayed.

CHAPTER I.—VITAL STATISTICS.

(1) POPULATION.

The quinquennial census taken on 5th April, 1931, revealed the following population:—

European, 49,910; Asiatic and coloured, 4,102; native (estimated), 1,055,000.

The growth of the European population is shown by the following:—

1901 census, 11,032; 1921 census, 33,620; 1926 census, 39,174; 1931 census, 49,910.

It is satisfactory to record that the European population of the country has increased during the last quinquennium by nearly twice the amount it had increased between 1921 and 1926, i.e., by 10,736 as against 5,554. Immigration declined during the year. The gross number of European immigrants was 1,893, as against 3,370 in 1930, while the net immigration is estimated at 630, as against 1,120 in the previous year. Births exceeded deaths by 765. As a result of the low death rate and high birth rate for 1931, the rate of natural increase of the population is high, viz., 15.26 per 1,000. The rate of natural increase in England and Wales during the corresponding year was only 3.5.

(2) BIRTHS.

There were 1,182 European births in 1931, corresponding to an annual birth rate of 23.58 per 1,000 of the European population—a fall of .66 compared with the previous year. Of these births, 22 were illegitimate. The birth rates of recent years are given below and compared with those of the Union of South Africa and of England and Wales.

European Birth Rates, 1920-31.

	Southern Rhodesia.	Union of South Africa.	England and Wales.
1920-24 (average)	26	28	21
1925	23	27	18
1926	24	26	18
1927	24	26	17
1928	25	26	17
1929	24	26	16
1930	24	26	16
1931	24	Not available	16

The birth rate in Southern Rhodesia remains a little lower than that of the Union of South Africa, and much higher than that of England and Wales.

In comparing Southern Rhodesia with England and Wales, it must be borne in mind that the population of the Colony favours a high birth rate, in that it contains a greater proportion of persons of child-bearing ages. Even bearing this factor in mind, the people of Southern Rhodesia can congratulate themselves upon their birth rate, especially when it is considered that this rate in England and Wales fell to 15.8 in 1931, the lowest birth rate on record in that country.

(3) DEATHS.

A. Number of Deaths.—There were 417 European deaths in 1931, corresponding to an annual death rate of 8.32 per 1,000 of the European population. This rate is .83 below that of 1930 and is the lowest death rate on record in the Colony.

In comparing the healthiness of different countries, an alteration of the crude death rate must be made to allow for difference in the age and sex distribution of the population. If the death rates are brought to one of the standards usually employed in international comparisons—that of the population of England and Wales in 1901—Southern Rhodesia will be seen to compare favourably with the Union of South Africa and with Great Britain.

European Death Rates, 1920-31.

	Crude death rate, Southern Rhodesia.	Standardised death rate.		
		Southern Rhodesia.	Union of South Africa.	England and Wales.
1920-24 (average) ...	9.5	11.6	11.0	11.2
1925 ...	9.6	11.7	10.2	10.7
1926 ...	8.8	10.0	10.3	10.1
1927 ...	9.1	10.0	10.3	10.6
1928 ...	10.7	11.9	10.7	9.9
1929 ...	10.1	11.6	10.0	11.5
1930 ...	9.2	10.0	10.2	10.8
1931 ...	8.3	8.8	Not available	

B. The Causes of European Deaths.—The following table shows the causes of European deaths in Southern Rhodesia during the last five years. Details of European deaths are also given in table (1) at the end of this report.

Causes of European Deaths, 1927-31.

Name of disease.	1931.	1930.	1929.	1928.	1927.	Totals.	Percentage of total deaths.
1. Violence (all forms) ...	53	44	45	40	37	219	10.03
2. Heart disease ...	49	39	43	24	31	186	8.52
3. Pneumonia and bronchitis ...	42	50	36	58	40	226	10.35
4. Malaria and blackwater fever ...	36	28	42	38	30	174	7.97
5. Nervous diseases ...	27	23	27	31	29	137	6.28
6. Premature birth and diseases of early infancy	24	23	26	32	15	120	5.50
7. Cancer ...	23	52	32	42	36	185	8.48
8. Tuberculosis (all forms)...	15	19	16	23	19	92	4.21
9. Diarrhoea and enteritis ...	14	16	17	15	10	72	3.25
10. Influenza ...	10	11	15	12	9	57	2.61
11. Dysentery ...	6	8	3	10	7	34	1.56
12. Old age ...	5	10	11	8	8	42	1.92
13. Enteric fever ...	2	6	13	8	6	35	1.60
14. Diphtheria ...	2	3	5	3	3	16	.73
15. Whooping cough ...	1	2	6	4	...	13	.60
16. Measles ...	...	...	1	1	1	3	.14
17. Scarlet fever ...	...	...	...	...	...	...	...
18. Other causes ...	108	109	131	128	96	572	26.20
Totals ...	417	443	469	477	377	2,183	100.00

1. *Deaths from Violence*.—Those classified in the international list as deaths due to violence constitute the largest group amongst the causes of death in 1931. The principal addition to the previous year is the regretted loss of seven lives in drowning accidents.

Attention must again be drawn to the number of deaths occurring in connection with motor transport. Nine of the 53 deaths under the above heading were due to this cause, viz.: Motor car accidents, 5; motor cycle accidents, 2; motor car and motor cycle accident, 1; fall under motor tractor, 1. It is to be hoped that the development of town planning legislation will avoid the dangers caused by the “grid-iron” pattern adopted by those who planned streets in the days when it was not possible to foresee the needs of rapid transport. Although the alteration of lines of traffic once laid down is troublesome and may be expensive, it is suggested that these difficulties are not insuperable and that they demand the attention of local authorities concerned.

2. *Heart Disease* was the disease responsible for the largest number of deaths in 1931. The position is the same in Great Britain.

3. *Pneumonia and Bronchitis* come third on the list of causes of death in 1931, but in the total for the last five years, which is a truer guide, this disease is definitely first.

4. *Malaria and Blackwater Fever* rank high as a cause of death in Southern Rhodesia, being fourth on the list for 1931 and fifth in the total for the last five years. Malaria is responsible for 8 per cent. of European deaths, many being those of young children. A disease largely of rural areas and the smaller towns, it is one of our most important public health problems. It is further discussed under the section dealing with malaria, Chapter II.

5. *Cancer*.—The deaths due to cancer, the second largest cause of death in England in 1930, were unusually low in Southern Rhodesia last year. It comes seventh on the list for the year and fourth in the total for the last five years.

6. *Tuberculosis (all forms)*.—The low mortality from tuberculosis, 4.2 per cent. of all deaths during the last five years, as compared with 7.9 per cent. in England and Wales in 1930, confirms the view expressed in my last report that Southern Rhodesia is a favourable country for phthisical patients. The absence of bovine tuberculosis in the Colony is also an important and highly creditable factor.

7. *Acute Infectious Diseases*.—The total of deaths from dysentery, typhoid fever, diphtheria, etc., was low in Southern Rhodesia in 1931, and compares favourably with the mortality from infectious ailments in European countries. No deaths occurred from measles or scarlet fever and only one from whooping cough.

(4) INFANT MORTALITY.

There were 53 deaths of infants under one year of age, corresponding to an annual infant mortality rate of 44.75 per 1,000 live births. The infant mortality rates of recent years are given below and compared with those of the Union of South Africa and of England and Wales.

European Infant Mortality Rates, 1920-31.

	Southern Rhodesia.	Union of South Africa.	England and Wales.
1920-24 (average)	68	78	77
1925	77	68	75
1926	49	65	70
1927	47	71	70
1928	72	71	65
1929	67	64	74
1930	45	70	60
1931	45	not available	66

It will be noted that the infant mortality rate of Southern Rhodesia is much lower than that of either the Union of South Africa or England and Wales.

The mothers of Southern Rhodesia are to be congratulated upon the care of their children, which is reflected by the lowest infant death rate on record in the Colony (44.75) and one which compares so favourably with the corresponding rates in the Union and in England. Nevertheless this rate can be brought lower. Many of the deaths were due to diseases which are preventable. This fact is demonstrated by the two following tables.

European Infant Deaths, Table I.

Causes of Death, 1922-31.		
Disease.	No. of deaths.	Percentage.
Premature birth and diseases of early infancy	238	39.01
Bronchitis and pneumonia	87	14.26
Diarrhœa and enteritis	70	11.48
Malaria	50	8.20
Measles, whooping cough, diphtheria, dysentery	34	5.57
Various, not classified above	131	21.48
Totals	610	100.00

European Infant Deaths, Table II.

Deaths during different Months, 1922-31.		
	No. of deaths.	Percentage.
First month	277	45.41
2 months to 6 months	196	32.13
6 months to 12 months	137	22.46
Totals	610	100.00

Neo-Natal Mortality.—Nearly one-half of the deaths of babies under one year occur during the first month of life, which constitutes the neo-natal mortality. These deaths are chiefly due to premature birth and diseases of early infancy (see Table I.). It is generally recognised that such deaths are due chiefly to causes operating before birth, and that the remedy lies largely in the ante-natal supervision of pregnant women, a measure which is also regarded as perhaps the most important essential for reducing maternal mortality and morbidity.

Diarrhœa and Enteritis, from which 11.48 per cent. deaths occurred, are usually the result of an infection, frequently fly-borne.

Malaria ranks fourth as a cause of infant death, for 8.20 per cent. of which it was responsible. Malaria is a definitely preventable disease.

It can thus be seen that the very low infant death rate of Southern Rhodesia can be reduced still lower. It must further be pointed out that the death rate of babies is a measure of only part of the injury done, seeing that the diseases which kill some produce serious and often long-lasting damage in those that survive.

Valuable work in connection with child life is carried out, especially among the Asiatic and coloured population, by the Child Welfare Societies in our larger towns. These receive grants from the Government and the local authorities concerned.

(5) MATERNAL MORTALITY.

There were six deaths of European mothers due to pregnancy and child birth during 1931, corresponding to a maternal mortality rate of 5.08 per 1,000 live births. Though lower than the exceptionally high rate of 6 per 1,000 births in 1930, this still represents a high rate of maternal mortality. The maternal mortality rates of recent years are given below and compared with those of the Union of South Africa and of England and Wales.

European Maternal Mortality Rates, 1920-31.

	Southern Rhodesia.	Union of South Africa.	England and Wales.
1920-24 (average)	5.0	4.8	4.0
1925	6.9	5.6	4.1
1926	6.4	4.6	4.1
1927	3.0	4.8	4.1
1928	5.5	5.0	4.4
1929	4.6	5.3	4.3
1930	6.0	5.2	4.4
1931	5.1	Not available	Not available

It will be seen that the maternal mortality of Southern Rhodesia is nearly the same as that of the Union of South Africa. The type of population in the Colony is, however, different from that of the Union, a fact which is illustrated by the markedly lower infant mortality in Southern Rhodesia, and it is submitted that this Colony should be capable of producing a lower maternal death rate.

The unsatisfactory state of the maternal death rate is further emphasised when it is compared with that of England and Wales. The average rate in Southern Rhodesia for the five years 1926-1930 was 5.1, while that of England and Wales was 4.3. It must be pointed out that the maternal mortality rate of England and Wales is regarded as far too high, and that Great Britain is straining every effort and sparing no expense in order to reduce it.

Besides the loss of valuable lives of mothers which is involved in a high maternal mortality rate, there are further consequences of extreme gravity. (1) A high maternal death rate implies a high rate of illness in mothers during and after child-birth, some of which is long and debilitating in character. (2) The causes which bring about a high maternal mortality also contribute to an unnecessarily high proportion of still-births and to a high neo-natal mortality, *i.e.*, to a large number of deaths of infants during the first few weeks of life. It must further be pointed out that it has been shown that many of the factors which cause the death of mothers in child-birth are avoidable, and that given suitable conditions this suffering and loss of life can be very greatly reduced. This fact is borne out by the following table.

European Maternal Deaths, 1922-31.

Cause of death.	No. of deaths.	Percentage.
Puerperal sepsis	18	33.96
Accidents of pregnancy	13	24.53
Other accidents of child-birth	9	16.98
Puerperal albuminuria	6	11.32
Puerperal hæmorrhage	5	9.43
Other causes	2	3.78
Total	53	100.00

Much the largest factor in the causation of maternal deaths in Southern Rhodesia is puerperal sepsis, which during the last ten years has been responsible for one death in every three due to child-birth. Puerperal sepsis is an infection and is to a large extent a preventable condition. Accidents associated with pregnancy and child-birth also rank high. Many of these can be foreseen and avoided by ante-natal supervision. Albuminuria, which was responsible for 11 per cent. of the deaths, is a condition which lends itself to diagnosis and treatment in its early stages.

Intensive study has been devoted to these problems throughout the world during recent years. Certain essential conclusions may be referred to here.

(1) *Ante-natal Care.*—Many abnormalities occurring in connection with motherhood can be detected by a doctor during the period of pregnancy, although they may not be noticeable to the patient. Such abnormalities may be capable of early treatment and remedy, thus preventing dangerous trouble at a later

stage. It is essential that every pregnant woman should have effective antenatal supervision by her doctor, and one of the important steps in reducing mortality in child-birth is the education of the public in this matter. Antenatal supervision should be as much a part of the routine of motherhood as is the preparation of baby clothes, and should commence from the date when a woman is aware that she is pregnant.

(2) *Provision of Hospital Beds.*—In young colonies long distances from medical facilities, combined with the lack of female assistance in the home, will render the institutional treatment of confinements essential for many years to come for a large proportion of European mothers. Some of the maternity homes in the Colony have attained the highest standard of buildings, equipment and staffing, and have a record of successful work which would compare with any similar institutions in the world. It is regretted that there are others which fall below the minimum standard which should be expected. In this connection it may be pointed out that the construction and planning of maternity homes require perhaps greater care than any other medical institution.

(3) *Trained Midwives.*—The services of a qualified midwife to act either as midwife or maternity nurse is an essential part of the arrangements for child-birth.

At present there are no facilities for training midwives in Southern Rhodesia. In the interests of the Colony this is a matter urgently requiring remedy. For many years Southern Rhodesia has been training general nurses of a standard which enables them to compete successfully with the nurses of the rest of the Empire. There is a shortage of and an immediate demand for trained midwives in the Colony, and at the present time these can only be secured from other areas which are better equipped in this respect. Many Southern Rhodesian women wish to obtain this important qualification and to fill the demand which exists for their services in their own country. To do so they must at present leave the country to study and to obtain their diplomas. This is a course which many suitable women are naturally unable to undertake for financial and other reasons.

There is a large number of untrained and unsuitable persons attending women in child-birth in Southern Rhodesia at the present day. It would be of little effect to introduce legislation for the purpose of enforcing the standard of midwifery which British mothers regard as their right, until this Colony has facilities for securing trained women. Our mothers will continue to suffer unnecessarily in child-birth until this is done, and from this aspect there is little prospect of reducing the death rate in child-birth, which at present constitutes a reproach upon a country whose general death rates and whose infant mortality rates are most creditably low.

This matter has received the earnest attention of the Government during the past year. The proposed erection of a new maternity home at Bulawayo has afforded a unique opportunity of making this the starting point of an institution for the training of midwives for the Colony. The Beit Trustees, who have done so much for maternal welfare in Southern Rhodesia, have taken a most sympathetic and helpful interest, and there is every hope that this will form the solution of one of the urgent needs of the Colony.

During the year the Government made grants amounting to £1,706 towards the maintenance of maternity homes. A large capital contribution towards the erection of the Bulawayo maternity home has also been promised.

CHAPTER II.—INFECTIOUS AND COMMUNICABLE DISEASES.

(1) NOTIFICATION.

Notification of the more important infectious diseases is obligatory under the "Public Health Act, 1924," but is very incomplete. The following figures are taken from various returns, and, though not representing the full number of cases, are of interest as giving an idea of the infectious diseases prevalent, especially among the European population. The figures as to European deaths are complete.

Infectious Diseases, 1931.

Name of disease.	European		Native	
	Cases	Deaths	Cases	Deaths
1. Scarlet fever	12	...	...	...
2. Chicken-pox	111	...	84	...
3. Influenza ... ..	...	...	20	3
4. Whooping cough	75	...	61	...
5. Typhoid fever	57	3	40	12
6. Para-typhoid fever ... ..	...	...	...	...
7. Diphtheria	45	1	7	1
8. Measles	169	...	93	...
9. Rubella (German measles) ... ..	...	...	10	...
10. Cerebro-spinal meningitis	2	1	19	7
11. Acute poliomyelitis	3	...	1	...
12. Mumps ... ..	...	...	...	...
13. Erysipelas	2	...	2	...
14. Undulant fever (Malta fever)	14	...	...	...
15. Trypanosomiasis ... ..	...	...	...	...
16. Small-pox ... ..	...	...	43	1

In addition to the above, European deaths were registered from the following grave infective diseases, of which there is no record as to the number of cases:—

European Deaths, 1931: (1) Malaria 24, blackwater fever 12—total 36; (2) tuberculosis (respiratory) 13, other forms 1—total 14; (3) dysentery 6.

(2) MALARIA.

There were registered 24 European deaths from malaria and 12 from blackwater fever, making a total of 36—an increase of 8 upon the previous year, when the number was 28. This increase is probably accounted for by the somewhat continuous rainfall along the north-eastern portion of the plateau facilitating the development of mosquitoes in that part where the rural population is most dense.

In the total for the last five years malaria and blackwater fever rank fourth in the list of diseases causing European deaths, for 8 per cent. of which they are responsible, including 8 per cent. of the deaths of babies under one year of age. As a cause of death they are surpassed among diseases only by pneumonia, cancer and heart disease. Further, malaria is responsible for much debility and illness which involves economic loss to the European community. The problem of malaria is therefore one of the first importance to the people of Southern Rhodesia. A contribution of great practical importance in connection with the control of malaria was made during the year by the discoveries of Professor Swellengrebel in the Union of South Africa. Professor Swellengrebel's thesis is briefly as follows:—

Only two of the 20 species of anopheline mosquitoes in the Union are of importance as vectors of the malarial parasite, viz., *A. gambiae* (*costalis*) and *A. funestus*. Further, these two insects have highly restricted breeding places. Their larvæ or embryos are found only in certain places, and are absent from all other collections of water. It should therefore be possible by attention to these particular breeding places (species sanitation) to eliminate malaria from a district.

The problem of controlling malaria by anti-larval measures is thus greatly reduced; for example, the time-honoured swamp may be neglected as far as the Union is concerned, and indeed is better left alone, as partial draining of swamps may turn them from the breeding places of harmless mosquitoes into suitable habitations for the vectors of malaria. Most large collections of water are harmless as breeding places. Most collections of water round human habitations breed anophelines, but only the minority breed malaria carriers. The majority breed other types of mosquitoes interesting to the entomologist, but not to the sanitarian.

Professor Swellengrebel found that in the Union *funestus* larvæ are found only in the grassy, shaded edges of hill streams. They do not occur in seepage areas or in the natural or artificial swamps occurring in the course of streams. They are not found in standing water.

Generally speaking, the habitat of *gambiae* is equally limited. Its larvæ are found in the sunny, vegetationless rain water ponds kept from drying by continual replenishment by rains. Roadside puddles and hoof marks of cattle are among its commonest breeding places. The problem of control of *costalis*, which to the undiscerning layman looks a hopelessly costly proposition, reduces itself to dealing with a few pools and puddles easily abolished by paying moderate care to the system of irrigation.

Fourteen species of anophelines have been identified in Southern Rhodesia. Leeson found the malaria parasite in only the same two as in the Union, viz., *A. gambiae* and *A. funestus*. In certain other respects his findings correspond closely to those of Professor Swellengrebel. It is therefore probable that by the application of species sanitation to the control of the larvæ of these two mosquitoes, it may be possible to reduce the problem of malaria control by anti-larval measures from an almost hopeless task to a working proposition which can readily be applied. As soon as it is possible, it is hoped to investigate this important question in Southern Rhodesia.

The number of bottles of quinine issued by the Government during the year was 12,206, as against 10,968 in 1930. The quinine issued is of the highest quality obtainable. Each bottle contains 100 five-grain tablets of quinine hydrochloride, so that the total issue was considerably more than a million five-grain tablets. The expenditure on quinine during the year was ~~£13,062~~ and the receipts ~~£16,045~~, ^{£1645} the difference being accounted for by stocks in hand at the end of last year.

(3) LEPROSY. ^{£1362.}

Leprosy is sufficiently prevalent among the natives of Southern Rhodesia to render this disease a serious public health problem. What numbers there are we do not know. They have been estimated at from two to five per 1,000 of the native population. The disease is scattered throughout the country, apparently with endemic foci in certain areas, e.g., in the south-eastern portion of the Colony and again in the neighbourhood of Mtoko. Although leprosy is perhaps the least readily contracted of all infectious diseases, the presence of a considerable number of persons suffering from a grave infective ailment, which in its early stages is difficult to detect, is not without danger to the white community. Lepers have been found working in public institutions and in private houses. Last year a European inhabitant was found to be suffering from the disease (possibly contracted outside the Colony) and is now under treatment at Ngomahuru hospital.

There are three leper hospitals in the Colony:—(1) The Government Leprosy Hospital at Ngomahuru; (2) the Government Leprosy Hospital at Mtoko; (3) the Swedish Mission at Mnene, which has a small leper institution attached.

Details in regard to these hospitals are set out in the table below:—

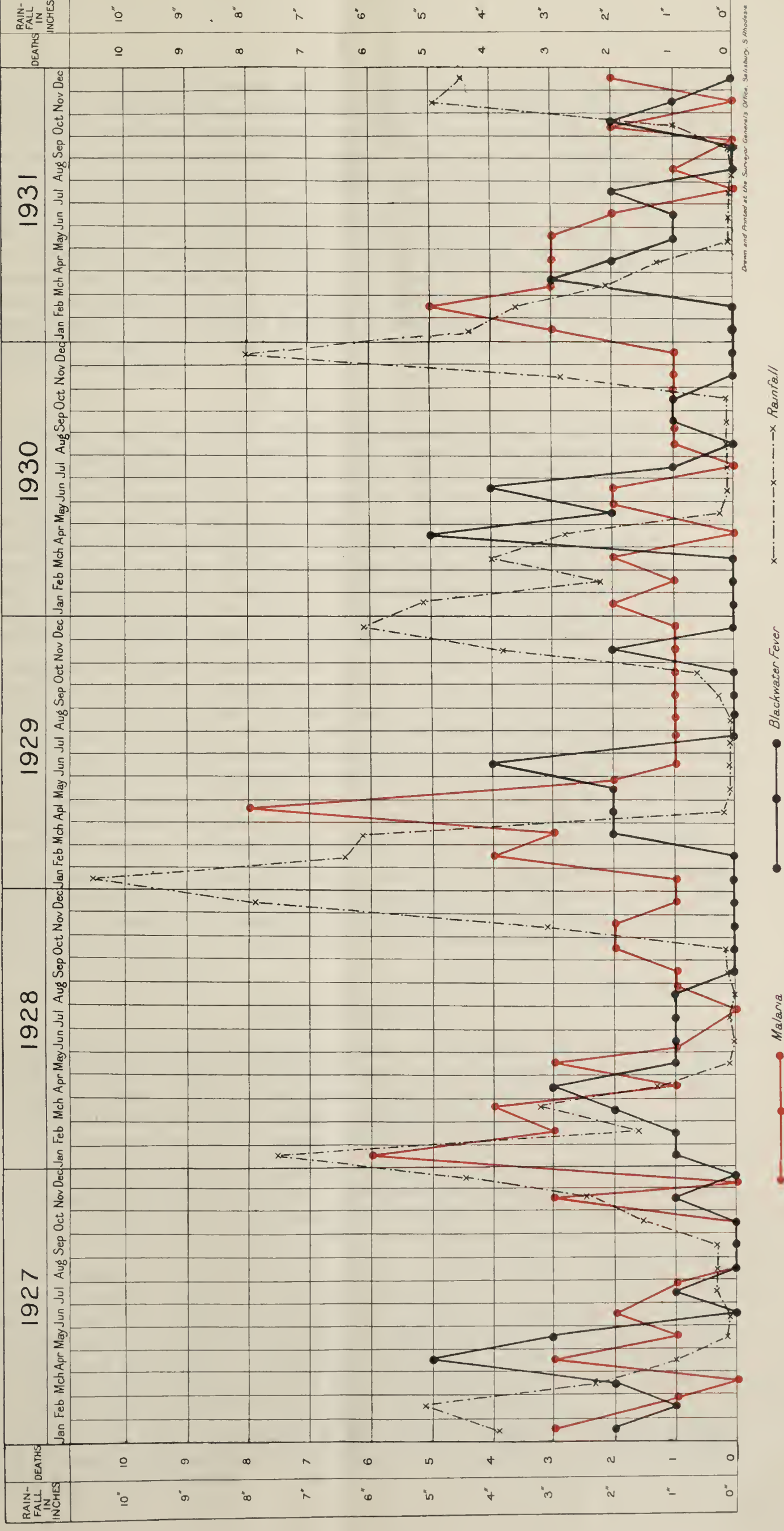
<i>Lepers Treated in 1931.</i>					
	In hospital, 1.1.31.	Admitted, 1931.	Discharged or died.	In hospital, 31.12.31.	Total cases treated in 1931.
Ngomahuru	255	148	63	340	403
Mtoko	217	113	8	322	330
Mnene	33	20	21	32	53
Total	505	281*	92	694	786

There were admitted 264 new patients during the year, and the total number of cases treated rose from 696 to 786. A tribute is paid to the successful management of these hospitals by the large number of patients coming in voluntarily, many of whom are in the early stage, in which the disease is most amenable to treatment. It is also satisfactory to record that in the two Government hospitals 44 patients were sufficiently recovered to be discharged. Such cases will be examined periodically by the Government Medical Officer of the district they live in.

The Government is indebted to the British Empire Leprosy Relief Association for the generous gift of £750. Of this, £550 was for the purpose of installing an efficient water supply at Ngomahuru Leprosy Hospital, while £200 was for

* Includes 17 re-admissions.

Chart Showing Rainfall and Deaths from Malaria and Blackwater Fever.



the purpose of conducting leprosy surveys, which will be carried out during the coming year. The value of such surveys cannot be over-estimated, both in regard to investigating the extent of the disease and also in educating the native mind in regard to the prevention and cure of leprosy. We are also indebted to the Association for valuable gifts of anti-leprotic drugs supplied during the year.

The elaboration of effective drugs in recent years has converted the lazaret of mediæval days to a curative hospital. Great divergence of views still exists in regard to anti-leprotic policy. The consensus of modern opinion recommends the course adopted by the Government of Southern Rhodesia. The diagnosis and treatment of early cases is the keynote of any scheme designed to eliminate leprosy. It is therefore essential to encourage patients to come forward voluntarily for treatment. But the power of compulsion must be retained and exercised when necessary.

(4) HELMINTHIC DISEASE.

For some years the Public Health Department has been cognisant of the fact that diseases caused by parasitic worms occur in this country to a greater extent than had hitherto been considered to be the case, and that the harm done by such diseases is considerable. Dr. Orpen had carried out investigations amongst school children, and had pointed out that 8.7 per cent. of 1,247 boys were infested with the *Schistosoma* (bilharzia) worm. In 1930 the Government were fortunate in securing Dr. Blackie from the London School of Hygiene and Tropical Medicine for the purpose of investigating these problems. A brief summary of Dr. Blackie's findings is given below. They will be published *in extenso* by the London School of Hygiene and Tropical Medicine.

Although the climatic conditions of Southern Rhodesia are not such that these parasites develop to the extreme degree to which they attain in certain tropical countries, it is a factor of the first importance to the public health to know that mild helminthic infestations are common amongst both Europeans and natives in this country, and that there is reason to believe that these infestations in the course of time do much harm to the tissues of the host. It is a sufficient illustration to state that among unselected Europeans in Salisbury 1 in every 20 was found to be infested with bladder schistosomiasis and 1 in 66 with the intestinal variety, whilst among similar natives the figures approximated 1 in 3 and 1 in 20 respectively.

It is fortunate that modern therapeutics enable us to destroy effectively these parasites when they have invaded the human body. Dr. Blackie's work will enable active measures to be taken against these diseases, and it is hoped that his valuable researches will be carried further when circumstances permit.

A Summary of the Results of an Investigation into the Helminthic Diseases of Southern Rhodesia.

A special study of the helminthic diseases of Southern Rhodesia was made under the Rhodesian Research Fellowship over a period extending from May, 1930, to February, 1931. The investigation took the form of an extensive helminthological survey of the various population groups, followed by a closer study of certain problems that emerged as a result of the initial survey.

As a result of field and laboratory investigations, the conclusion was reached that schistosomiasis (bilharzia disease) constitutes the helminthic disease of major importance in the Colony. This conclusion is based not only on statistical evidence, but also on a pathological study of *post-mortem* material.

Statistically, it was found that urinary schistosomiasis occurred with considerably greater frequency than the intestinal form of the disease. Thus amongst indigenous natives the incidence of urinary schistosomiasis ranged between 6.9 per cent. and 26.9 per cent. in different parts of the country, while the incidence of intestinal schistosomiasis varied from 1.8 per cent. to 16.6 per cent. When these results are pooled it is evident that a very large section of the indigenous native population is affected with schistosomiasis.

In the mixed native population of the Salisbury district it was found that 29.7 per cent. had urinary schistosomiasis, while 17.3 per cent. had the intestinal form of the disease.

Several batches of northern (non-indigenous) natives were examined as they passed through the frontier stations at Rusambo and Mount Darwin on their way southward, and although the total number examined under these circumstances was small, the results consistently showed that although the incidence of intestinal schistosomiasis was very similar to that found amongst the indigenous natives of the Colony, the general incidence of urinary schistosomiasis was definitely greater. Thus the incidence of *S. hæmatobium* amongst Northern Rhodesia natives was 58.7 per cent., amongst Nyasaland natives 25.3 per cent. and amongst a small group of natives from Portuguese East Africa 43.8 per cent.

Circumstances prevented anything like a full survey of the European and non-European sections of the population, but of 200 unselected Europeans examined in the Salisbury Hospital 1.5 per cent. were infected with *S. mansoni* and 5 per cent. with *S. hæmatobium*. It has been shown by Dr. L. J. J. Orpen that 8.7 per cent. of schoolboys have urinary schistosomiasis. No cases of schistosomiasis were found amongst a small group of 28 coloured persons examined.

A salient feature of schistosomiasis as met with in Southern Rhodesia is the high percentage of cases presenting no clinical evidence of the disease, but there is *post-mortem* evidence to show that well-marked pathological changes can be found in those sub-clinical cases of the disease. It is evident, therefore, that the more closely schistosomiasis is studied from the laboratory standpoint, the more importance it assumes as a disease-producing factor in the Colony.

It was established that *S. mattheei*, which is ordinarily a parasite of sheep and cattle, is also capable of establishing itself in the human host, where it gives rise to the condition of urinary schistosomiasis. This schistosome occurs also as a natural infection amongst baboons, and can be transmitted to grey monkeys experimentally.

A series of biological studies were carried out on the fresh water molluscs of the Colony, and it was established experimentally that *Physopsis globosa* constitutes the optimum intermediate host of *S. hæmatobium* and *S. mattheei*, and *Planorbis pfeifferi* the optimum intermediate host of *S. mansoni*. Other molluscan genera were found, but there was no evidence that they shared in the transmission of the mammalian schistosomes. This is a subject, however, which requires further investigation.

Hookworm infestations come next in importance. It was found that incoming natives tend on the whole to carry a heavier hookworm load than the indigenous native, but from indirect evidence it appears that after a period of residence in the Colony a definite loss of hookworms occurs. Consequently, it was found, when the intensity of the infestations was investigated, that light infestations were the rule. Under certain conditions, however, such as exist along the eastern border of the Colony and on some of the mines, there is a tendency for heavier infestation to predominate, and in these circumstances clinical or laboratory evidence of hookworm disease is to be anticipated.

In the reserves of the Wankie, Sebungwe, Darwin and Chibi areas the hookworm incidence averaged about 3.5 per cent., but in the Umtali and Melsetter area the incidence rose to about 20 per cent., and in certain parts of these districts reached a very much higher level.

The mixed native community of the Salisbury district showed an incidence of 23.2 per cent., while an average incidence amongst incoming natives amounted to about 16 per cent.

It was found that of the 200 Europeans examined 7.5 per cent. were infested with hookworm, and it is interesting to note that mission workers in the Umtali and Melsetter districts and mine officials in various areas constituted the bulk of the positive cases.

Thus while few cases of hookworm *disease* were encountered, the suggestion is made that light infestations affect the welfare of the host in an indirect manner by reason of their deleterious effects on the hæmopoietic tissues and immunity mechanism of the host.

Tania (tape worm) infestations occurred to the extent of 3.6 per cent. in a mixed native community, while 1 per cent. of Europeans were found infested with this parasite. No case of hydatid disease of man was met with during the period of investigation.

Hymenolepis nana—the dwarf tape worm of man—was found to be widely distributed throughout the country, but its actual incidence was low.

In some of the eastern districts of the Colony *Ascaris lumbricoides* rivals hookworm in importance. Amongst indigenous natives of the Melsetter district, for example, *Ascaris* reached an incidence of 12.1 per cent., while at one kraal in the Ingorima Reserve 80 per cent. of the population harboured the parasite.

The relatively high incidence of *Ternidens deminutus* as a parasite of man in Southern Rhodesia is a matter of considerable interest, but further investigations are necessary before the pathogenicity of the parasite can be assessed.

Other helminthic parasites found in man in Southern Rhodesia were *Enterobius vermicularis*, *Trichuris trichiura*, *Strongyloides* spp. and certain filaria worms. These parasites, however, constitute the minor helminthic infestations of the Colony. Some rare helminths of academic interest were also found.

(5) SMALL-POX.

Only 43 cases of small-pox, all natives, with one death, were recorded in the Colony during the year as against 697 cases in 1930. The table given below gives the incidence of this disease during the last twelve years.

Small-pox Cases, 1920-31.

Year.	European.	Native.	Total.
1920	—	448	448
1921	1	514	515
1922	1	503	504
1923	—	16	16
1924	—	2	2
1925	2	10	12
1926	—	1	1
1927	—	6	6
1928	1	254	255
1929	2	425	427
1930	3	694	697
1931	—	43	43

It will be seen from the table that small-pox tends to occur in the Colony in large epidemic waves, involving many hundreds of cases and causing much disturbance and expense before they are overcome. This is not surprising when one views the fact that there are on the borders of Southern Rhodesia countries containing large numbers of natives and few Europeans where the disease appears to be continuously endemic. For example, in one area which supplies many immigrants into Southern Rhodesia there were recorded 7,381 cases with 237 deaths in 1931.

In view of these facts, it is apparent that the only policy which will keep the Colony free from this highly dangerous and infectious disease is the policy which has kept other countries free from it, namely, to maintain a community well protected by vaccination. This is by no means an insuperable task in an area whose population is a little over a million persons. At present the high price of imported lymph renders this course an impossibility. The erection of the proposed Government Lymph Station has been unavoidably postponed for financial reasons, but it is hoped that this scheme will be carried into effect before long.

For reasons of economy, and owing to the almost complete absence of small-pox from the Colony, very little vaccinating was done during the year. The cost of lymph purchased was £760 3s.

(6) TUBERCULOSIS.

There were 14 European deaths from tuberculosis as against 19 in the previous year, while 52 new cases were admitted to the Government hospitals, as against 47 in 1930. Apart from the fact that the absence of bovine tuberculosis from Southern Rhodesia diminishes the risk of infection as compared with older countries where tuberculosis affects 25 per cent. of milk cows, there is much to suggest that the climate of Southern Rhodesia is a healthy one as far as tuberculosis is concerned.

These facts are reflected in the low percentage of deaths caused by tuberculosis—4.2 per cent. of all European deaths during the last five years, as compared with 7.9 per cent. in England and Wales during 1930.

Nevertheless tuberculosis is sufficiently common in Southern Rhodesia to render it desirable that special provision of a suitable character should be provided for the treatment of persons suffering from this disease. Both from the therapeutic and from the humanitarian point of view, it is preferable that consumptive patients should not be treated in the general wards of hospitals. The point will be borne in mind in the future development of the hospitals policy of the Colony.

(7) VENEREAL DISEASE.

Venereal disease may be regarded as common among native populations in South Africa. The Government maintain certain residential institutions to which patients can be sent for treatment, as well as out-patient dispensaries in various parts of the Colony. Venereal disease centres are also maintained by the municipalities, with the help of Government grants, for cases occurring in their areas. Further, a number of cases are dealt with by the medical missions, who also receive grants from the Government. The specific medicines for the treatment of venereal disease are costly, and these are supplied to all institutions free of charge.

A large sum of money is devoted by the Government to anti-venereal measures in this way, over £6,500 being expended in 1931. It must, however, be pointed out that venereal disease is so widely spread amongst native races that there can be little hope of materially reducing these ailments until such time as the country is able to afford a system of general control of native disease throughout the country, on lines such as were laid down in my report of last year and in the section of this report dealing with the health of the native.

(8) PNEUMONIA AND BRONCHITIS.

Pneumonia and bronchitis are responsible for a high mortality among both Europeans and natives. An immense amount of research work has been done in regard to pneumonia during recent years. This destructive disease constitutes one of the most difficult and, it must be admitted, as yet unsolved problems of preventive medicine.

The following number of cases and deaths of natives from pneumonia were reported during the year from mine and Government hospitals:—

	Cases.	Deaths.
Mine hospitals	1,076	209
Government hospitals	602	189

(9) TYPHOID FEVER.

There were 57 cases of typhoid fever with 7 deaths among the European population, while 40 cases with 12 deaths were reported among natives.

(10) CEREBRO-SPINAL MENINGITIS.

There were 2 European cases of cerebro-spinal meningitis, with 1 death. Nineteen cases and 7 deaths were reported among natives. Largely a carrier-borne disease, there is little doubt that the natives, among whom the disease is not uncommon, are the source from which the white man is usually infected.

(11) WHOOPING COUGH, MEASLES, SCARLET FEVER, CHICKEN-POX, GERMAN MEASLES.

There is no known means of preventing these highly infectious ailments, especially in a country where there are large schools. As is the case at present throughout the world, scarlet fever is usually very mild in type, and it is satisfactory to record that there has been no death from it during the last five years, although numerous cases have occurred. Whooping cough and measles are both diseases to be dreaded in young children. Fortunately no death from these occurred in 1931, though many cases were reported.

In the list given below the number of deaths is complete, but the cases do not represent the full number that occurred.

European Cases and Deaths, Five Years (1927-31).

	Cases.	Deaths.
Whooping cough	274	13
Measles	349	3
Scarlet fever	180	—
Chicken-pox	605	—
German measles	92	—

(12) INFLUENZA.

This highly infectious and uncontrollable disease, which is always accompanied by a considerable mortality, did not visit the Colony in epidemic form during 1931.

(13) YAWS.

Numerous cases of yaws were found among the natives during the year, especially in the lower and warmer areas of the Colony. The difficulty of distinguishing this disease from syphilis is rendered less serious in that it responds readily to the same treatment as the latter disease. The argument as to whether these two diseases are not identical has again been raised during the year.

(14) PSEUDO-TYPHUS FEVER.

Cases of this interesting disease have occurred not infrequently during the year and were mostly mild in character. Many efforts were made to identify the carrier tick, but without any definite success.

(15) HUMAN TRYPANOSOMIASIS.

Fortunately no case of this grave disease was recorded in the Colony during the year, in spite of the presence of the tsetse fly (*Glossina morsitans*) in contact with human beings in certain areas of the country.

(16) DIPHTHERIA.

There were 45 European cases of diphtheria in 1931, with 1 death. During the last five years this disease has shown a tendency to increase.

(17) PLAGUE, RABIES, TYPHUS FEVER.

It is satisfactory to again report that no cases of these formidable infectious diseases were recorded in Southern Rhodesia. They occur both north and south of the Colony, and are responsible for a grave loss of human life.

(18) UNDULANT (MEDITERRANEAN) FEVER.

Two European cases of this disease—the same number as in 1930—were notified in 1931. There were no deaths. Contagious abortion of cattle, a closely allied disease, is common in Southern Rhodesia.

CHAPTER III.—GENERAL.

(1) SPREAD OF DISEASE BY AIRCRAFT.

The opening up of new lines of transport has almost invariably been followed by the spread of infectious disease along the routes concerned, but hitherto the length of the journey from infected countries has acted to some extent as a barrier, and has simplified the task of protecting healthy areas from their less fortunate neighbours.

The change in transport brought about by aeroplanes necessitates a revision of our ideas on this subject. These remarks apply to many grave epidemic diseases—for example, plague, cholera, typhus and small-pox. The most formidable menace as far as the eastern and southern area of Africa is concerned is yellow fever, a disease which was widely disseminated by ship transport in the eighteenth and nineteenth centuries in those tropical and sub-tropical areas of both hemispheres whose shores are washed by the Atlantic Ocean, and has since been firmly installed along the coastal countries from Senegal to the Congo. Central, Eastern and Southern Africa have hitherto remained immune, though presenting conditions favourable to the spread of yellow fever, i.e., a warm climate, with the appropriate mosquitoes. So grave is this menace considered that the Government of India have insisted upon retaining the right to exclude aircraft from countries infected by yellow fever.

Recent research has disclosed facts which render yellow fever even a greater danger than was previously supposed, notably the following:—

- (1) Many infectious cases present such slight symptoms that it is impossible to recognise them.
- (2) Persons may become infected from patients without any intervention of mosquitoes. It has also been found that the virus is sometimes transmitted from one mosquito to another without the intervention of a human host.
- (3) Human cases must be regarded as being infectious during the incubation period of the disease, as well as during the first three days of the attack, and it is probable that the patient is most dangerous before any symptoms have shown themselves.

The principal vector of the yellow fever virus, the *Aedes argenteus* (*Stegomyia fasciata*) mosquito, is widely distributed in Southern Rhodesia. This insect will bite during the day time. In addition, *Aedes vittatus* and *Aedes simpsoni*, two other Southern Rhodesia mosquitoes, are known to convey yellow fever. It is possible that further research may show that other kinds of mosquitoes, such as *Culex fatigans*, the commonest mosquito in Southern Rhodesia, or other species, may also act as vectors.

The French Aero-Postal Service propose to establish a trans-African service from France to Madagascar. The proposed route will be from Oran, in Morocco, across the Sahara to Mamey, thence to Lake Chad and Coquilhatville, whence the Belgian air route to Elizabethville will be followed. From Elizabethville the service will be continued to Broken Hill, where it will connect with the Imperial Airways route. There is therefore the possibility of passengers who may have come from yellow fever areas in the west transferring at Broken Hill from the French service to Imperial Airways. Infected passengers from a known yellow fever area can thus readily arrive in Southern Rhodesia within the period of incubation of yellow fever, which is six days, as also can infected mosquitoes. The latter remain infectious till the end of their lives.

It is therefore necessary for Southern Rhodesia to adopt suitable precautions to prevent yellow fever from entering the country. The facts outlined above show that, having once taken root, especially among the native population, it might cause a disaster which would be most serious to the health and the trade of the Colony.

The Permanent Committee of the Office International d'Hygiène Publique has drawn up an international convention for the sanitary control of aircraft, which lays down special precautions to be adopted against the introduction of yellow fever and of other formidable epidemic diseases by aeroplanes. It is proposed to adopt measures for the protection of the Colony on the lines laid down in this convention.

(2) TOWN PLANNING.

In my report of last year attention was drawn to the necessity for further legislation in regard to town planning, and to the fact that there is urgent need for better control of the development of towns and the laying out of roads and streets. It was pointed out that Southern Rhodesia is at present in a favourable position to deal with matters which a few years later may be beyond remedy, or only remediable at great expense.

The legislation which is at present contained in the Public Health Act and in the Municipal Act is inadequate, with the result that municipalities are at present hampered by lack of control of the development of their towns and of the land surrounding their areas, which eventually will be absorbed therein, and which therefore vitally concerns these authorities.

The Colonial Secretary appointed a committee of experts to draw up a Bill for this purpose, which it is hoped will come before the Legislative Assembly next year. The contents of this Bill were laid before the Municipal Congress held in Umtali in March, 1930, and were unanimously approved by the representatives of local authorities present.

Some important provisions of the Bill are as follows:—

- (1) Definite procedure is laid down for the use of persons wishing to subdivide their land for the purpose of townships and building sites.

- (2) Extended powers are given to municipalities, not only to undertake zoning and town planning for the areas at present under their control, but also in regard to land within five miles of the municipal boundaries.
- (3) Power is given to municipalities to expropriate land, for which compensation can be paid on lines at present employed in other countries, i.e., by agreement, or, failing agreement, by reference to a compensation court to be appointed by the Governor.

Many of the districts of Southern Rhodesia possess towns of great beauty and streets which are admirably broad, thanks to the foresight of those who first laid out towns in this country. On the other hand, indications are visible on all sides of the need of giving to the local authorities powers to control the development of their cities such as are possessed by the corporate bodies of other countries.

It is hoped that the new legislation will foster the development not only of efficiently designed and attractive towns, but also towns where transport can be conducted with the greatest degree of convenience and safety.

During the year 25 applications, as against 18 in 1930, were dealt with by the Town Planning Committee appointed under the provisions of the Public Health Act. In almost every instance the proposed lay-out had to be altered—usually extensively—while in several cases the design had to be completely changed in order to bring it within the principles of modern town planning. Two applications were refused.

(3) SCHOOL MEDICAL SERVICE.

The School Medical Service was reorganised during the year by the introduction of a feature which is regarded as most valuable in similar schools in England. While retaining the services of one special doctor of large experience who visits the entire Colony, a portion of the work of routine examination has been allocated to the medical officers who are responsible for the daily visitation and treatment of sick children in the schools. This arrangement has the advantage of rendering the doctor familiar with the constitution of the children for whom he is responsible, from the time of their first admission to school.

Mentally Retarded Children.—Classes have been conducted at Salisbury and Bulawayo during the year by two teachers specially trained for this purpose. These classes have proved a most valuable adjunct to the educational system.

Physical Education.—It is satisfactory to report that there are now 11 physical training instructors on the establishment of the Education Department—6 men and 5 women. The question of physical education has received much consideration during the year. In this connection the following points must be borne in mind:—

(1) *The Importance of Physical Education.*—It is a common saying that a child's legs can generally take care of themselves; but the arms, the chest and the abdomen, the fine muscles of the hand, the co-ordination of muscular effort and its sound nervous regulation, all these need education and training. Hence, organised physical training is necessary. Such training is an aid to the growth and nutrition of the child. It is necessary even for the proportional development of its body and brain, and is an effective means of producing sound health and body functioning. Games, dancing and swimming are valuable accessories to physical exercises in this connection.

(2) *The Organisation of Physical Training.*—To serve the above purposes it is obvious that physical training must be carried out both regularly and frequently. Hence the importance of physical training instructors, not only as actual instructors of children in physical exercises, but also as trainers of school teachers in this subject. It is impossible for a limited number of specialists by themselves to give all the physical instruction necessary in a country containing a large number of schools.

(3) *Remedial Exercises.*—Physical training instructors are taking up with enthusiasm the individual training of children requiring special remedial exercises for developmental defects, and much useful work has been done during the year in this connection.

Eighty children were tested by Dr. Clark during the year, the Stanford revision of the Binet-Simon tests being utilised as an aid to grading. Of these, 63 were classed as feeble-minded, 10 as normal and 7 as imbeciles.

Results of Medical Examinations.—Children were examined in age groups on the lines recommended by the English Ministry of Health, viz., entrants, leavers and two intermediate groups between entrants and leavers. In addition, any child at any age can be specially referred for examination under the group of “specials.” Further, all children found to have defects in the previous year are re-examined. The results of these examinations show that the health of the children of Southern Rhodesia is highly satisfactory. The following table gives a list of the defects found in each age group.

Cases Recommended for Treatment, 1931.

4,930 Children Examined.

	Number referred for treatment.						Total.
	Group 1.	Group 2.	Group 3.	Group 4.	Group 5.	Group 6.	
	Entrants.	First Intermediates.	Second Intermediates.	Leavers.	Re-examination.	Specials.	
Malnutrition ...	5	2	3	4	...	1	15
Uncleanliness ...	...	...	...	...	2	1	3
Skin—							
Ringworm ...	...	...	...	...	1	...	1
Impetigo ...	2	...	...	2	2	...	6
Veld Sores ...	...	...	...	1	...	1	2
Other diseases ...	4	8	2	...	2	3	19
Eye—							
Blepharitis ...	5	3	2	2	4	2	18
Conjunctivitis ...	1	4	3	1	7	3	19
Defective vision ..	31	16	16	31	55	9	158
Squint ...	3	2	3	2	4	...	14
Other conditions ...	2	4	5	4	6	2	23
Ear—							
Defective hearing ...	14	8	5	4	12	5	48
Otitis media ...	3	...	...	...	1	...	4
Other ear diseases ...	...	1	2	...	2	1	6
Nose and Throat—							
Enlarged tonsils ... }	84	16	12	34	72	6	224
Slightly enlarged tonsils }							
Enlarged tonsils and adenoids ...							
Defective speech ...	9	6	5	3	7	2	32
Other defects ...	10	11	5	10	23	5	64
Heart—							
Organic disease ...	...	...	3	...	4	1	8
Functional disease ...	1	...	...	...	1	...	2
Anæmia ...	8	10	9	3	4	4	38
Lungs—							
Bronchitis ...	...	1	...	1	3	...	5
Other non-T.B. diseases	6	3	2	1	3	...	15
Tuberculosis—							
Glands ...	...	...	...	...	...	...	...
Hip ...	...	...	...	...	...	...	...
Other bones and joints	...	...	...	...	...	...	...
Nervous System—							
Epilepsy ...	1	...	...	2	2	1	6
Chorea ...	...	...	...	...	1	...	1
Other conditions ...	...	...	...	...	2	1	3
Spleen—							
Much enlarged ...	18	2	2	5	7	1	35
Slightly enlarged ...	6	3	4	3	10	1	27
Other diseases and defects	61	32	33	31	80	11	248

Work of School Dentists.—The Government employ two whole-time school dentists, who are kept busily engaged attending to the teeth of children whose parents are not in a position to secure dental treatment themselves, and also in examining the teeth of other children who do not come within this category, and reporting defects to their parents so that treatment may be secured. The value of the regular supervision and treatment of the teeth of school children is now showing itself in the much better condition of children's mouths to what was the case when the Government first started school dental work. Success in school dentistry is based on the fact that defects are not allowed to go far, hence the value of early inspection and treatment.

The following table summarises the work of the school dentists during the year:—

1. Number of children examined	3,075
2. Number of children treated	1,200
3. Number of fillings: Temporary teeth, 467; permanent teeth, 2,031	2,498
4. Number of extractions: Temporary teeth, 1,456; permanent teeth, 405	1,861
5. Other operations	160

In 3,075 children examined there were found 7,318 carious teeth, and in addition 940 septic teeth—more than two decayed teeth per child.

(4) THE HEALTH OF THE NATIVE.

In a country inhabited by European and native races the health of the native is a question of importance to both communities. Without the assistance of European medical supervision the ignorance of the native renders him helpless in the presence of infective disease. The native is thus the reservoir from which the white man, who is obliged to live in close contact with him, becomes infected. As instances may be cited, diseases of the type of malaria, dysentery and various internal worms, such as *Schistosoma* (formerly known as *bilharzia*). Unfortunately the native carrier of these diseases is commonly quite healthy to external appearances, and the European is thus powerless to guard against the danger which is at his door.

The only remedy lies in systematic medical control of the natives, who in a sub-tropical country are prone to the many ailments incidental to such a life.

Natives dwelling in townships obtain treatment at the Government hospitals. Outside the towns a limited amount of treatment is supplied by mission hospitals and Government dispensaries. Most of these, though excellent as far as they can go, are small. Broadly speaking, the problem of the health of the native is as yet untouched.

To deal with a million natives spread over an area of 151,000 square miles at first sight appears a problem financially impossible. The solution must lie to a great extent with the native himself. It is possible to cover a large tract of country by means of dispensaries worked by trained native orderlies obtainable at a low wage, provided these dispensaries are under the supervision of a European doctor with a hospital centrally placed in his area. It is considered that the comparatively small cost of maintaining medical units of this type could be borne by the native population of the Colony.

A scheme on these lines was set forth in my last report, the carrying out of which has been necessarily deferred for financial reasons.

Native Dispensaries.—The following table shows the number of patients treated during 1931 at the dispensaries maintained by the Government. Many of these were venereal patients:—

Name.	No. of patients treated.
Bikita	2,576
Mount Darwin	703
Goromonzi	203
Kezi	243
Gwaai	297
Marandellas (opened 26th November, 1931) ...	22
Buhera (now closed)	—
Total	4,044

(5) NATIVE LABOUR ON MINES AND WORKS.

The number of natives employed on mines and works was 34,988, being 10,354 less than the previous year. Pneumonia continues to be the most serious problem, being responsible for 209 or nearly half of the 443 deaths which occurred from disease. There were 87 fatal accidents.

A number of warnings had to be issued in cases where the minimum ration laid down by law was not being supplied. In some of these, scurvy had supervened as a result. Non-payment of wages, wrongful contracting and insufficient accommodation were other defects. Only one compound inspector was employed during the year, and the officers of the Native Department assisted in compound supervision in consequence.

The following tables give details in regard to sickness and mortality among natives employed on mines.

Table I.—Natives on Mines.

Cases of Sickness, Deaths and Death Rates, 1931.

Disease.	Total sick.	Total deaths.	Death rate per mille per annum.
Malaria	2,129	19	0.54
Scurvy	94	6	0.17
Syphilis	594	10	0.28
Pneumonia	1,076	210	5.97
Phthisis	46	36	1.02
Other diseases of the chest	1,328	13	0.37
Dysentery	91	5	0.14
Diarrhœa	246	1	0.03
Other intestinal diseases	99	12	0.34
Heart disease	23	16	0.46
Debility	156	17	0.48
Influenza	3,059	24	0.68
Other diseases	1,783	75	2.13
Minor ailments	8,882	...	...
Total	19,606	444	12.61
Accidents and Injuries—			
Major	269	87	2.47
Minor	8,201	...	...
Total	28,076	531	15.08

Table II.—Natives on Mines.

Comparative Statement of Mortality since 1926.

	1926.	1927.	1928.	1929.	1930.	1931.
Average number employed	42,047	42,046	43,703	46,981	45,342	35,202
Disease—						
Number of deaths	598	595	756	876	687	444
Death rate per mille per annum	14.22	14.15	17.30	18.65	15.15	12.61
Accident—						
Number of deaths	91	94	94	110	98	87
Death rate per mille per annum	2.16	2.24	2.15	2.34	2.16	2.47
All causes—						
Number of deaths	689	689	850	986	785	531
Death rate per mille per annum	16.38	16.39	19.45	20.99	17.31	15.08

(6) LABORATORIES.

*Report of the Director, Public Health Laboratory and
Pasteur Institute, Salisbury.*

The following shows the nature of the examinations made during the year 1931:—

Bacteriological and protozoological, 4,137; pathological, 1,295; medico-legal, 11; helminthological, 407; chemical, 660; entomological, 4; zoological, 4. Total—6,518.

The above examinations include the following:—Malaria, 689 tests—98 positive; undulant fever, 110—4 positive; enteric fevers, 316—73 positive; dysentery (a) bacillary, 102—8 positive (Flexner) and 16 due to metadysentery bacilli; (b) amœbic, 146—2 positive; typhus and pseudo-typhus—6 negative; cerebro-spinal fever, 26—5 positive; tuberculosis, 258—44 positive; leprosy, 8—1 positive; diphtheria, 585—119 positive; venereal diseases, 1,077—340 positive; bilharzia, 229—57 positive *S. hæmatobium*, 19 positive *S. mansoni*, 1 positive *S. mattheei*.

Report of the Director, Bacteriological Institute, Bulawayo.

The demand made upon the services of Dr. G. R. Ross has more than justified the wisdom of instituting a bacteriological laboratory at Bulawayo. During the year, 2,181 examinations were carried out, including blood tests; microscopical, cultural, serological and bio-chemical; examinations of urine, fæces and sputa; throat swabs; examinations of cerebro-spinal fluid and a large number of miscellaneous examinations. Specimens were forwarded for examination by the following:—Government, 534; railways, 514; municipality, 93; private, 931; various free examinations, 109. Total—2,181.

Report of the Government Analyst, Salisbury.

During the year 596 samples were examined, so that comparison with last year's number—338—indicates considerably increased service. These included 158 bio-chemical, 159 medico-legal, 95 milk, 44 water, 25 effluent and 23 Customs control samples. Though entered as one sample, many of the number involved numerous analyses, e.g., a test meal comprising a dozen or more specimens, or a garment with a considerable number of stains. Many of these analyses involved issues of great importance, e.g., a capital charge, important Customs prosecutions, etc.

CHAPTER IV.—HOSPITALS.

There was a fall in the total number of admissions to the general hospitals during the year, the total number of patients admitted being 12,559, as compared with 13,452 for 1930. The fall was not confined to Europeans only; the native admissions also show a decline. European admissions were 5,093 and native 7,466.

Admissions.

	1930.	1931.
European	5,272	5,093
Native	8,180	7,466
	<hr/> 13,452	<hr/> 12,559

From a perusal of the attached summaries of work done in the hospitals it will be seen that the decline in the admissions is almost entirely confined to the larger hospitals. The smaller cottage hospitals are not only holding their own, but in some cases are increasing their work considerably, as witnessed by the increased number of admissions, both European and native.

The decline in the European admissions may be largely attributed to the present financial depression in the Colony, the tendency being to avoid incurring the increased expenditure involved by hospital charges wherever possible.

With regard to the decline in the native admissions, this is possibly due to the fact that the large companies employing extensive native labour are retrenching drastically, with the result that many natives are unemployed and are drifting back to the reserves. These natives would ordinarily supply a percentage of sick and injured to the larger hospitals, but on their return to their kraals they do not seek hospital attention.

Number of Patients treated in Government Hospitals, 1931: Paying patients—European, 3,964; coloured and native, 2,713: Total, 6,677. Free patients—European, 1,387; coloured and native, 5,647: Total, 7,034. Total number of patients treated, 13,711.

Gross Expenditure on Hospitals (not including doctors' salaries): £93,284; total amount credited to revenue, £27,843; deficit, £65,441.

1. *Salisbury Hospital*.—Admissions during 1931 showed a decided fall as compared with 1930. European admissions numbered 1,879, a fall of 103 compared with 1930, when admissions were 1,982. Native admissions showed a similar decline: 1,521 admissions during 1931 as compared with 1,635 for 1930, a fall of 114. Out-patient attendances show an increase from 4,286 in 1930 to 4,350 in 1931, a rise of 64. The X-ray department for 1931 showed the total number of patients examined to be 924. This is an increase of 22 over the total figures for 1930, which were 902. Theatre: The total number of operations performed during 1931 amounted to 1,378; this is an increase of 50 on the figures of the previous year, when the numbers were 1,328. Major operations numbered 444. Minor operations numbered 934.

The new Nurses' Home block was completed on the 24th December, 1931, and handed over for occupation. This building comprises 35 rooms with 3 attached bathroom blocks. The complete Nurses' Home now consists of 91 rooms with 12 bathroom blocks. Additional accommodation for the native staff has also been provided.

2. *Bulawayo Hospital*.—European admissions numbered 1,653, being an increase of 104 over 1930, when admissions numbered 1,549. Native admissions fell by 298 cases, the total number admitted being 1,757. This decline is attributed to the fact that the railways have opened their own hospital in Bulawayo and now treat their own cases. The out-patient department steadily increases its sphere of usefulness. European out-patients dealt with numbered 3,728, an increase of 756 over 1930. Native out-patients numbered 3,521, an increase of 231. In the massage and electrical department 1,206 treatments were carried out in the former and 951 in the latter. The X-ray department dealt with 1,108 patients (Europeans 820, coloured 23, natives 265). Theatre: During the year 1,032 operations were performed as compared with 1,086 last year. European operations: Major, 402; minor, 523. Native operations: Major, 125; minor, 252.

The accommodation in the European hospital has increased from 100 to 110 beds. A large new native ward was erected during the year, and there is now accommodation for all the native cases. The sewerage system was finally completed throughout the hospital and is functioning satisfactorily.

3. *Umtali Hospital*.—The total admissions were 1,007, a decrease of 62 from 1930. European admissions declined from 472 in 1930 to 395 in 1931, but the native admissions increased from 597 to 612. The number of out-patients treated also dropped, the total being 695, composed of 36 Europeans and 659 natives. During the year 199 operations were performed, of which 90 were major and 109 minor.

4. *Gwelo Hospital*.—European admissions declined by 38, the number of patients admitted being 359. The native admissions also fell off greatly; cases admitted being 491 in 1931 as compared with 700 in 1930. The out-patient department, however, almost doubled its work, the number of cases treated during the year being 459 Europeans and 1,247 natives. Operations performed totalled 218. The X-ray apparatus recently installed has been made good use of during the short time, and over 90 photographs have been taken.

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5. *Gatooma Hospital*.—Two hundred and fifty Europeans were admitted as against 290 in 1930. Native admissions numbered 578. The number of operations performed in the hospital were: 7 major and 50 minor, Europeans; 12 major and 43 minor, natives.

The Venereal Diseases Clinic continues its sphere of usefulness. Eight hundred and forty-nine native patients were treated during the year. The incidence of gonorrhœa amongst natives is increasing, but the later manifestations of syphilis are not seen, as natives apply for treatment now at an earlier stage.

6. *Sinoia Hospital*.—There was a drop of 48 European and 6 native admissions during 1931, the figures being 155 European admissions as compared with 203 in 1930, and 399 natives as compared with 405. Operations numbered 76, composed of 24 Europeans and 52 natives.

7. *Fort Victoria Hospital*.—There has been a steady decline of European admissions at this hospital during the last three years, the figures being 193 cases admitted in 1929, 162 in 1930 and 139 in 1931. On the other hand, the native admissions have increased from 170 and 238 in 1929 and 1930 respectively to 357 in 1931.

8. *Shamva Cottage Hospital*.—The European admissions increased by 2, the number admitted in 1931 being 75 as compared with 73 in 1930. There was a fairly large increase in the native admissions owing to the increased work of the Venereal Diseases Clinic. Out of the 424 cases admitted, 192 were treated for venereal disease.

9. *Gwanda Cottage Hospital*.—Admissions: Europeans, 57, an increase of 9 on the 1930 figures. Native admissions increased greatly from 301 in 1930 to 439 in 1931.

10. *Enkeldoorn Cottage Hospital*.—There has been a decided increase in the work of this hospital during the last year, the number of European cases admitted being 131, an increase of 25 over 1930. Native admissions also increased from 127 in 1930 to 157 in 1931. Several operations were performed in the theatre during the year.

11. *Ingutsheni Mental Hospital*.—During the year 1931 the total number of admissions were 122, composed of 23 Europeans and 99 natives. In all, 409 cases were treated: 53 male, 29 female Europeans and 258 male and 69 female natives. The recovery rate per cent. calculated on the number of patients admitted was 31.14 as against 29.7 for the previous year. The employment of able-bodied male European patients in agricultural work forms an important part of the treatment. The cost *per caput per diem* has been still further reduced by 5d. to 1s. 4½d.

The growth of this important institution is shown by the following table, which gives the number of cases treated each year since 1925. The European patients show an increase of 48 per cent. and natives 35 per cent.

Table of Cases treated in Ingutsheni Mental Hospital since 1925.

	European.	Native.	Total.
1925	43	214	257
1926	66 *	203	269
1927	64	231	295
1928	75	243	318
1929	68	246	314
1930	76	283	359
1931	82	327	409

12. *Ndanga Native Hospital*.—The work of this hospital continues to increase. The number of native cases admitted in 1931 was 731, an increase of 74 over last year. The total number of in-patients treated was 871.

* Includes European female patients, who had previously been sent to the Union.

CHAPTER V.—ADMINISTRATIVE.

(1) STAFF.

Southern Rhodesia Medical Department.—The staff of the Department is as follows :—

(1) Doctors (whole-time 27, part-time 5)	32
(2) Dentists	2
(3) Government Analyst	1
(4) Nurses	191
(5) Other European staff	48
(6) Asiatic and native staff	288
Total	562

Dr. L. J. J. Orpen, who has been in the service of the Government since 1908, retired at the end of the year. Dr. Orpen was the founder of bacteriological work in this Colony and has been in charge of the Government laboratory since its institution. His pioneer work in connection with undulant fever and other researches has secured him a name which will long be remembered with respect in the scientific world.

(2) REVENUE AND EXPENDITURE.

Total expenditure	£151,651
Total revenue	30,105
Net balance of expenditure	£121,546

(3) SOUTHERN RHODESIA NURSING SERVICE.

There are 176 nurses employed in Government hospitals, of whom 96 are qualified nurses and 80 are probationers in training. Probationer nurses are chosen as far as possible from daughters of persons who are living or have lived in the Colony, and are trained in the Government hospitals at Salisbury and Bulawayo. The popularity of the Nursing Service is shown by the fact that there were 230 applications during the year for 30 possible appointments as probationer nurses.

In the past nurses trained in Southern Rhodesia have been examined by, and have received the certificate of the Medical Council of the Union of South Africa. The Medical Council of the Union of South Africa is no longer able to carry out this course, and the Colonial Secretary has therefore approved of regulations under the "Nurses, Midwives and Other Persons Registration Act, 1930," whereby these examinations will in future be conducted in Southern Rhodesia by the Medical Council of the Colony. Arrangements whereby the certificate of the Southern Rhodesia Medical Council will be accepted reciprocally by the Union of South Africa and by the General Nursing Council of England and Wales are almost completed.

Those engaged in teaching probationers can be congratulated on the tribute paid to the efficiency of the Service by the following examination results during 1931 :—

	Number of candidates.	Number successful.	Number unsuccessful.
Preliminary Examination	22	20	2
		(3 with Honours)	
Final Examination	15	15	—
		(4 with Honours)	

The percentage of successes, viz., 94.1, is exceedingly high.

It is most satisfactory to note that of 14 probationers who completed their training during the year, all returned to the Service, with the exception of four who left to gain further experience abroad, and one who left for marriage.

(4) HEALTH OF THE B.S.A. POLICE, 1931.

European Section.—A total of 753 cases of illness and accident and 149 dental cases were dealt with during the year, representing a loss of 8,607 days. Over 50 per cent. of these cases were of a minor nature. Of the other causes of illness, malaria was the chief, with 136 cases and the loss of 921 days. There were no cases of blackwater. There were 6 cases of pneumonia and 1 death from this cause. Venereal disease does not appear to play much part in the cause of disability, only 7 cases being reported, representing 1.5 per cent. of the total strength.

There were 2 deaths during the year, 1 from pneumonia and the other from a fatal motor car accident.

Native Section.—There was a satisfactory decline in the incidence of sickness amongst the native troops. There were 1,258 cases treated in 1931, as compared with 1,430 in 1930. The days lost through illness and accident were 12,286. Malaria as a cause of disability showed an increase of 30 cases over last year. The incidence of influenza and pneumonia also showed a slight rise. There was a marked decline in the number of cases of venereal disease. There were 75 cases treated during the year as compared with 126 for 1930. There were 11 native deaths in 1931.

(5) LEGISLATION.

1. *Registration of Nurses, Midwives and Other Persons.*—This Act became law during the year. The necessity for legislative measures for this purpose was discussed in my last report.

2. *Town Planning.*—The position in regard to town planning legislation is discussed under the section of this report dealing with town planning.

(6) MEDICAL COUNCIL.

The Nurses, Midwives and Other Persons Registration Act, passed by the Legislative Assembly in 1931, rapidly began to show favourable results, the numbers of nurses and midwives registered in 1931 being treble the number in the previous year. The powers conferred by this Act were also employed for the purpose of drawing up regulations for the examination of student nurses in Southern Rhodesia. The first examination under this arrangement will be held in April, 1932.

The Colonial Secretary has fixed the 1st February, 1932, as the date after which the sale of certain poisons by unauthorised persons is prohibited under section 50 of the "Medical, Dental and Pharmacy Act, 1927."

During the year 16 medical practitioners, 2 dentists, 3 chemists, 41 nurses and 15 midwives were added to the register, the total numbers at the 31st December, 1931, being as follows:—

Medical practitioners, 115; dentists, 29; chemists and druggists, 63; trained nurses, 66; midwives, 18; mental nurses, 1.

(7) HABIT-FORMING DRUGS.

Import Certificates.—Seventy-three permits were issued, covering the importation of the following drugs, during 1931, as compared with 77 in 1930.

Drug.	1930. Ounces.	1931. Ounces.
Médicinal opium	31.75	68.2
*Opium (in tinctures, extracts and other preparations)	204.74	489.6
*Morphine alkaloid	74.13	15.8
Diacetyl morphine (heroin)	7.98	0.08
Cocaine	39.11	22.0
Dionin	—	1.0
Codeine phosphate	—	4.0
Ext. cannab. indica	—	2.0
Eukodal	—	0.93
"Dagga"	—	16.0

* The opium and not the morphine content is now calculated for all preparations made direct from opium, and the amount of morphine imported under these two items is approximately a third less than in 1930.

Export Certificates.—Thirty-one permits were issued, covering the export of the following drugs to Northern Rhodesia and the Union of South Africa, as compared with 29 in 1930.

Drug.	1930. Ounces.	1931. Ounces.
Medicinal opium	—	8.4
Opium (in tinctures, extracts and other preparations)	0.11	27.8
Morphine alkaloid	6.6	2.6
Diacetyl morphine (heroin)	1.11	0.14
Cocaine	4.41	3.9

Nineteen permits were issued by the Veterinary Department in 1931 for the purchase of 157 ounces of tincture of opium, as against 21 permits for 173.5 ounces during 1930.

R. A. ASKINS, M.D.,
Medical Director.

TABLE 1.

CLASSIFICATION OF DEATHS (EUROPEANS), 1931.

Deaths classified according to the International Classification of Causes of Sickness and Death.

I.—INFECTIOUS AND PARASITIC DISEASES.

Classifi- cation No.	Disease.	No. of Deaths.
1, 2	Typhoid and paratyphoid fevers	2
4	Relapsing fever (<i>Spirillum obermeieri</i>)	1
5	Undulant fever	1
9	Whooping cough	1
10	Diphtheria	2
11	Influenza	10
13	Dysentery	6
15	Erysipelas	1
16	Acute poliomyelitis	1
18	Cerebro-spinal fever	3
23	Tuberculosis of respiratory system	13
25	Tuberculosis of intestines and peritoneum	1
32	Disseminated tuberculosis	1
38	Malaria	24
44:6	Blackwater fever	12

II.—CANCER AND OTHER TUMOURS.

45	Cancer of buccal cavity and pharynx	1
46	Cancer of digestive organs and peritoneum	11
47	Cancer of respiratory organs	1
48	Cancer of uterus	2
49	Cancer of other female genital organs	2
50	Cancer of breast	1
51	Cancer of male genito-urinary organs	1
53	Cancer of other or unspecified organs	4
54	Non-malignant tumours	1
55	Tumours of undetermined nature	1

III.—RHEUMATISM, DISEASES OF NUTRITION AND OF ENDOCRINE GLANDS, AND OTHER GENERAL DISEASES.

56	Rheumatic fever	1
57	Chronic rheumatism, osteo-arthritis	2
59	Diabetes	9
66	Diseases of the thyroid and parathyroid glands	1

IV.—DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS.

71	Anæmia, chlorosis	2
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V.—CHRONIC POISONING.

75	Alcoholism (acute or chronic)	1
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VI.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

78	Encephalitis	1
79	Meningitis	2
81	Other diseases of the spinal cord	1
82	Cerebral hæmorrhage, apoplexy, etc.	13
83	General paralysis of the insane	2
84	Other forms of insanity	4
86	Infantile convulsions (age under 5 years)	2
87	Other diseases of the nervous system	2

VII.—DISEASES OF THE CIRCULATORY SYSTEM.

90	Pericarditis	1
91	Acute endocarditis	1
92	Chronic endocarditis, valvular disease	13
93	Diseases of the myocardium	22
94	Diseases of the coronary arteries (<i>Angina pectoris</i>)	4
95	Other diseases of the heart	8
96	Aneurism	6
97	Arterio-sclerosis	2
98	Gangrene	1
99	Other diseases of the arteries	1
102	Abnormalities of blood pressure	1
103	Other diseases of the circulatory system	1

VIII.—DISEASES OF THE RESPIRATORY SYSTEM.

Classifi- cation No.	Disease.	No. of Deaths.
104	Diseases of the nasal fossæ and annexa	1
105	Diseases of the larynx	3
106	Bronchitis	3
107	Broncho-pneumonia	13
108	Lobar pneumonia	6
109	Pneumonia (not otherwise defined)	20
110	Pleurisy	2
111	Congestion and hæmorrhagic infarct of lung, etc.	2
114	Other diseases of the respiratory system	8

IX.—DISEASES OF THE DIGESTIVE SYSTEM.

116	Diseases of the œsophagus	1
117	Ulcer of the stomach or duodenum	3
118	Other diseases of the stomach	2
119, 120	Diarrhœa and enteritis	14
121	Appendicitis	5
122	Hernia (intestinal obstruction)	3
123	Other diseases of the intestines	1
124	Cirrhosis of the liver	2
126	Biliary calculi	2
127	Other diseases of the gall bladder and ducts	1
128	Diseases of the pancreas	1
129	Peritonitis (without stated cause)	2

X.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM
AND ANNEXA.

130	Acute nephritis	2
131	Chronic nephritis	1
132	Nephritis (not stated to be acute or chronic)	1
133	Other diseases of the kidney and annexa	3
135	Diseases of the bladder	1
136	Diseases of the urethra, urinary abscess, etc.	1
137	Diseases of the prostate	4
139	Diseases of the female genital organs	1

XI.—DISEASES OF PREGNANCY, CHILD-BIRTH AND THE PUERPERAL STATE.

140	Post-abortive sepsis	1
141	Abortion (not returned as septic)	1
145	Puerperal sepsis (not returned as post-abortion)	2
146	Puerperal albuminuria and convulsions	1
150	Other or unspecified conditions of the puerperal state	1

XIV.—CONGENITAL MALFORMATIONS.

157	Congenital malformations	4
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XV.—DISEASES OF EARLY INFANCY.

158	Congenital debility	7
159	Premature birth	14
161	Other diseases peculiar to early infancy	3

XVI.—OLD AGE.

162	Old age	5
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XVII.—DEATHS FROM VIOLENCE.

163	Suicide by solid or liquid poisons and corrosive substances	2
164	Suicide by poisonous gas	2
165	Suicide by hanging or strangulation	2
167	Suicide by firearms	12
173	Homicide by firearms	1
175	Homicide by other means	1
177	Food poisoning	2
178	Accidental absorption of irrespirable or poisonous gas	3
179	Other acute accidental poisoning (not gas)	3
180	Conflagration	1
183	Accidental drowning	7
184	Accidental injury by firearms	2
186	Accidental injury by fall, crushing, etc.	13
192	Lightning	1
194	Other and unstated forms of accidental violence	1

XVIII.—ILL-DEFINED DISEASES.

200	Cause of death unstated or ill-defined	8
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Grand Total	417
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TABLE II.—Staffing, beds and patients at Government Hospitals, 1931.

Name of hospital.	European nursing staff.	Native staff	No. of beds.		No. of patients treated.			Daily average of patients.			No. of units maintained.			Average No. of days each patient was in hospital.	
			European.	Coloured and native.	European.	Coloured and native.	Total.	European.	Coloured and native.	Total.	European.	Coloured and native.	Total.	European.	Coloured and native.
Salisbury ...	62	69	96	117	1,953	1,611	3,564	79.2	98.8	178.0	28,932	36,397	65,329	14.8	22.6
Bulawayo ...	58	63	110	134	1,720	1,867	3,587	84.0	127.0	211.0	30,727	46,182	76,909	17.9	24.7
Umtali ...	10	22	38	46	406	638	1,044	12.7	23.0	35.7	4,634	8,363	12,997	11.4	13.1
Gwelo ...	8	14	25	52	370	522	892	10.46	25.74	36.2	3,863	13,437	17,300	10.4	25.7
Fort Victoria	4	13	14	32	140	380	520	4.2	27.6	31.8	1,556	10,095	11,651	11.1	26.6
Gwanda ...	4	8	7	22	57	459	516	2.1	28.4	30.5	773	10,389	11,162	13.5	22.6
Enkeldoorn	4	9	8	7	134	163	297	3.1	9.8	12.9	1,290	3,748	5,038	8.6	21.9
Gatooma ...	7	22	23	96	253	638	891	6.2	59.8	66.0	2,292	21,853	24,145	9.0	34.3
Shamva ...	3	12	17	21	78	462	540	2.2	35.2	37.4	826	12,847	13,673	10.6	27.8
Sinoia ...	4	12	11	29	158	422	580	5.1	24.6	29.7	1,886	8,997	10,883	11.9	21.3
Ingutsheni	16	23	80	270	82	327	409	62.4	248.1	310.5	27,785	90,469	113,254	277.9	276.7

TABLE III.—Return of Government and free patients treated in Government hospitals during 1931.

Name of hospital.	Number of free patients.			Total No. of units treated.		
	Coloured and native.		Total.	Coloured and native.		Total.
	European.	Coloured and native.		European.	Coloured and native.	
Salisbury ...	306	957	1,263	9,494	27,527	37,021
Bulawayo ...	680	1,061	1,741	10,339	32,726	43,065
Umtali ...	75	513	588	858	6,597	7,455
Gwelo ...	108	334	442	1,363	10,133	11,496
Fort Victoria	29	346	375	150	9,192	9,342
Gwanda ...	4	263	267	156	8,874	9,030
Enkeldoorn	72	162	234	800	3,686	4,486
Gatooma ...	30	348	378	697	15,723	16,420
Shamva ...	11	291	302	103	10,716	10,819
Sinoia ...	12	208	220	415	6,336	6,751
Ingutsheni	60	293	353	17,470	82,186	99,656

TABLE IV.—Statement of expenditure and revenue at Government hospitals for the year 1931.

Name of hospital.	No. of patients treated.	Vote 7 A & B. Salaries and travelling expenses.	Vote 7 C. Maintenance, drugs and equipment.	Gross expenditure.	Fees charged.	Revenue received.	Deficit of revenue over expenditure.	Revenue per cent. of gross expenditure.	Total amount outstanding.	
									End of 1930.	End of 1931.
		£	£	£	£	£	£		£	£
Salisbury ...	3,564	10,515	15,960	26,475	13,425	10,351	16,124	39.0	8,743	8,989
Bulawayo ...	3,587	9,855	15,566	25,421	12,845	9,867	15,554	38.8	6,151	7,502
Umtali ...	1,044	2,369	2,960	5,329	2,130	1,950	3,379	36.5	603	537
Gwelo ...	892	2,611	2,930	5,541	1,633	1,216	4,325	21.9	571	763
Fort Victoria ...	520	1,113	1,189	2,302	630	428	1,874	18.5	692	517
Gwanda ...	516	619	1,028	1,647	390	172	1,475	10.4	75	254
Enkeldoorn ...	297	707	838	1,545	196	94	1,451	6.08	170	143
Gatooma ...	891	2,153	3,373	5,526*	1,288	1,102	4,424	19.9	880	762
Shamva ...	841	881	1,282	2,163	514	281	1,882	12.9	303	420
Sinoia ...	580	845	1,385	2,230	846	535	1,695	23.9	1,327	1,604
Ingutsheni ...	409	4,684	3,952	8,636	2,114	1,847	6,789	21.3	1,297	1,343
Totals ...	13,141	36,352	50,463	86,815†	36,011	27,843	58,972		20,812	22,834

* This figure includes the expenditure on the Venereal Diseases Hospital.

† Does not include Ndanga and Ngomahuru Hospitals and expenditure of £2,804 on hospital stocks.

